

In re Appln. of PARK et al.
Application No. 10/784,093

REMARKS

Discussion of Claim Amendments

Claim 1 has been amended to remove the word "thin" and to recite that the coating is a continuous coating and that the rare earth oxide is crystalline. Crystallization is discussed in the specification at page 9, line 14. New claims 36-37 have been added and are directed to embodiments of the invention, see, e.g., page 4, lines 25-28. No new matter has been added.

The Office Action

The Office Action sets forth the following grounds for rejection:

1. Claims 1-7 are rejected under 35 U.S.C. § 112, second paragraph, for an alleged indefiniteness;
2. Claims 1-7 are rejected under 35 U.S.C. § 102(b), as allegedly anticipated by Nishio et al. (USP 5,856,009);
3. Claims 1, 2, and 7 are rejected under 35 U.S.C. § 102(b), as allegedly anticipated by Flaherty (USP 4,459,507), Ranby et al. (USP 4,396,863), or Fujino (USP 5,438,234);
4. Claims 1, 2, and 7 are rejected under 35 U.S.C. § 102(b), as allegedly anticipated by Okada et al. (USP 5,523,018); and
5. Claims 2-6 are rejected under 35 U.S.C. § 103(a), as allegedly unpatentable over Flaherty, Ranby et al., or Fujino, in view of a discussion provided by the Office Action.

Discussion of Rejections

1. Indefiniteness Rejection

Applicants have deleted the word "thin" from claim 1. In view of the foregoing, the indefiniteness rejection of claims 1-7 should be removed. Claims 36-37 have been provided with a specific thickness limitation.

2. Anticipation Rejections

(a) **Nishio et al.:** Claims 1-7 are rejected as allegedly anticipated by Nishio et al. Applicants have amended claim 1. Claims 2-7 are dependent upon amended claim 1. Nishio et al. fails to disclose the presently claimed invention. The presently claimed invention

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requires that the coating is continuous and comprises a crystalline rare earth oxide. Nishio et al. fails to disclose a continuous coating comprising a crystalline rare earth oxide. There is nothing in the cited reference that indicates that the heat resistant coating film is composed of a crystalline material. Crystallinity is not inherent in Nishio et al. Inherent anticipation can arise only when "the prior art necessarily functions in accordance with, or includes, the claimed limitations", regardless of whether persons of ordinary skill in the art would "recognize the inherent characteristics or functioning of the prior art." *Atlas Powder Co. v. Ireco Inc.*, 190 F.3d 1342, 1347 (Fed. Cir. 1999).

If the Office Action argues that such a result (crystallinity) may occur in Nishio et al., such argument is erroneous and against the law. Applicants respectfully submit, without in any way admitting or conceding that crystallinity may result from Nishio et al.'s disclosure, the mere fact that a certain thing may result from a given set of circumstances is not sufficient. Inherency may not be established by probabilities or possibilities. *See, Continental Can Co., USA, Inc. v. Monsanto Co.*, 948 F.2d 1264, 1268-69, 20 USPQ 2d 1746, 1749 (Fed. Cir. 1991). The Examiner must provide factual and technical grounds establishing that the inherent feature necessarily flows from the teachings of the prior art. Inherency must flow as a necessary conclusion from the prior art, not a possible one. *See, Ex parte Levy*, 17 USPQ2d 1461, 1464 (Bd. Pat. App. & Int. 1990); *In re Oelrich*, 666 F.2d 578, 581, 21 USPQ2d 323, 326 (CCPA 1981). Thus, the subject matter of claims 1-7 as well as new claims 36-37 are not anticipated by Nishio et al.

(b) Flaherty: Claims 1 and 7 are rejected as allegedly anticipated by Flaherty. Flaherty fails to disclose the presently claimed invention. Flaherty discloses that lumen maintenance of fluorescent lamps is improved by applying a vapor deposited film of yttrium oxide over the phosphor. The vapor is generated by electron beam bombardment of an yttrium oxide target. Flaherty does not coat the phosphor particle completely. The coating is on only one side of the phosphor. See Figure 2. The phosphor layer is item 22. The yttrium oxide layer is item 24. The outer side of the phosphor layer is in contact with the glass envelope (12). Further, Flaherty fails to disclose a crystalline coating. There is nothing in the cited reference that justifies inherency. A crystalline coating is not necessarily present in the disclosure of Flaherty. In view of the foregoing, claims 1 and 7, as well as claims 36-37, are not anticipated by Flaherty.

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(c) **Ranby et al.:** Claims 1 and 7 are rejected as allegedly anticipated by Ranby et al. Ranby et al. fails to disclose the presently claimed invention. Ranby et al.'s process is inherently not capable of producing a continuous coating. Ranby et al. uses a mixture of an aqueous slurry of a phosphor, an aqueous yttrium nitrate solution, and ammonia. Such a mixture cannot lead to the formation of a continuous coating layer, those of skill in the art would appreciate, since the concentration of metal forming metal oxide is essentially low. Accordingly, in Ranby et al., only a sparse or (partial) coating will be obtained after heat treatment. Further, there is no justification for inherency for reading crystallinity into Ranby et al. Even if a crystalline coating is obtained, *arguendo*, such a coating would not be continuous but would only partially or incompletely cover the phosphor. In view of the foregoing, Ranby et al. fails to disclose or anticipate the presently claimed invention.

(d) **Fujino:** Claims 1 and 7 are rejected as allegedly anticipated by Fujino. Fujino fails to disclose the presently claimed invention. Fujino, in claim 1, discloses a lamp having a non-fluorescent substance (e.g., an oxide containing yttrium and other elements) layer and a phosphor layer. The phosphor particles are not coated completely with a non-fluorescent substance. As one layer is coated on top of another layer, one of the sides of the phosphor layer is uncoated by the non-fluorescent substance layer. In examples 1-10, Fujino discloses that the phosphor particles are mixed with yttrium oxide particles and fluorescent lamps are prepared from this mixture. As can be appreciated by those skilled in the art, this Fujino process cannot give a phosphor particle completely coated by a continuous crystalline coating of yttrium oxide. Fujino's product will contain particles adjacent to each other but not a coating of the oxide over the entirety of the phosphor particle. Accordingly, Fujino fails to anticipate the presently claimed invention.

(e) **Okada et al.:** Claims 1, 2, and 7 are rejected as allegedly anticipated by Okada et al. Okada et al. fails to disclose the presently claimed invention. The presently claimed invention requires that the layer of rare earth oxide is crystalline. There is nothing in Okada et al. that would justify the reading of a crystalline rare earth oxide layer. The limitation of crystalline rare earth oxide layer is not necessarily present in the disclosure of Okada et al. In view of the foregoing, Okada et al. fails to anticipate the presently claimed invention.

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3. Obviousness Rejection


Claims 2-6 are rejected as allegedly unpatentable over Flaherty, Ranby or Fujino, in view of a discussion by the Office Action. As applicants have amended claim 1, the invention of claims 2-6, which are dependent upon claim 1, are not obvious over the cited references and discussion. As discussed, Flaherty discloses a fluorescent lamp wherein the phosphor layer is coated only on one side of the oxide layer. Fujino discloses a fluorescent lamp having a non-fluorescent substance layer and a phosphor layer coated on the inner wall of a glass bulb. Alternately, Fujino mixes phosphor particles and the yttrium oxide particles and uses this mixture to prepare the fluorescent lamp. Thus, in Flaherty and Fujino, there is no continuous coating of the phosphor particle by a crystalline layer of rare earth oxide. Furthermore, Ranby et al., Flaherty, and Fujino fail to suggest to those of ordinary skill in the art a crystalline rare earth oxide layer continuously coating the phosphor particles. In view of the foregoing, Flaherty, Fujino, Ranby et al., and the Office's discussion, either alone or in combination, fail to suggest to those of ordinary skill in the art the presently claimed invention. In addition, the surface coated phosphor of the claimed invention has advantageous properties such as improved CL efficiency and stability. In view of the foregoing, the present claims are patentable over the cited references.

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Conclusion

The application is considered in good and proper form for allowance, and the Examiner is respectfully requested to pass this application to issue. If, in the opinion of the Examiner, a telephone conference would expedite the prosecution of the subject application, the Examiner is invited to call the undersigned attorney.

Respectfully submitted,



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